Remarks

I. Status of the Application and Claims

As originally filed, the present application had a total of 17 claims. Claims 1-4, 8, and 10-17 were withdrawn as the result of a restriction requirement. The remaining claims, 5-7 and 9, have been cancelled herein and new claims 18-40 have been introduced.

II. The Amendments

Support for the claims introduced herein can, for the most part, be found in the cancelled claims. For example, claims 18 and 27 represent cancelled claim 5, rewritten in an independent format and reading in the limitations of base claims 1 and 2. Dependent claims 20-26 recite the individual members of the Markush group of claim 18.

Support for new claims 28 and 29 may be found on page 7 of the application, lines 8-11.

New claim 30 represents original claim 9 rewritten in an independent format, with claims 31-38 reciting individual members of the Markush group.

Support for claims 39 and 40 may be found in original claims 6 and 7, respectively.

These amendments do not add new matter to the application and their entry is therefore respectfully requested.

III. Claim Objections

On page 2 of the Office Action, the Examiner objects to claim 5 as being dependent upon a non-elected base claim. In response, Applicants have rewritten the claim in an independent form and believe that the Examiner's objection has thereby been obviated.

The Rejections

I. Rejection of Claims Under 35 U.S.C. § 112, Second Paragraph

On page 2 of the Office Action, the Examiner rejects claims 5-7 and 9 under the second paragraph of 35 U.S.C. § 112. It is alleged that the claims are indefinite for reciting the phrase "substantially pure." The Examiner alleges that it is unclear what level of purity is indicative of "substantial."

Applicants respectfully traverse this rejection.

It is commonly accepted practice to distinguish genes or proteins that have been isolated and sequenced from their counterparts in nature by requiring that they be "substantially purified" or "substantially pure." Thus, a protein or gene found in its native state falls outside the scope of claims. A definition is provided on page 6 of the present application, line 34 - page 7, line 2. This states that: "a 'substantially purified' isoform is one that has been separated from other accompanying biological components and will typically comprise at least 85% of a sample, with greater percentages being preferred." Applicants respectfully submit that there is nothing indefinite in this definition. Moreover, a review of the written description guidelines set forth by the PTO for claims directed to polynucleotides, should show that a similar phrase is employed in almost all of the examples provided.

II. Rejection of Claims Based Upon the Enablement Requirement of Patentability

On pages 2-4 of the Office Action, the Examiner rejects claims 5-7 under 35 U.S.C. § 112, first paragraph, based upon the allegation that the claims fail to meet the enablement requirement of patentability. The Examiner points out that the present claims encompass a very large number of individual peptides (through original claim 2) and that many of the claimed embodiments may not be functional. In support of this, the Examiner argues that protein chemistry is unpredictable and that it is often possible to destroy the function of a protein due to a single amino acid modification.

Applicants respectfully traverse this rejection.

Claims 18-26 are directed to a substantially pure polynucleotide consisting of a nucleotide sequence encoding a protein *consisting essentially of* certain specified sequences that have been found to play a role in promoting multidrug resistance. The transitional phrase "consisting essentially of" serves to exclude any sequence that has been modified in such a way that this function is lost. Thus, the claims encompass polynucleotides encoding proteins exactly identical in sequence to those recited, as well as other proteins whose structures have not undergone substantial modification as evidenced by their retention of biological function.

If the enablement requirement of patent law required that one of skill in the art be able to determine *all* of the embodiments falling within the scope of a claim, then the amount of experimentation needed would, indeed, be enormous. However, this is an incorrect standard. The relevant question is, given any nucleotide sequence falling within the scope of the present claims as a starting point, can one of skill in the art make and use that sequence without undue experimentation. In the present case, the making of any polynucleotide falling within the scope of Applicants' claims can be accomplished using well known synthetic methods, and the use of the polynucleotide to make cells that exhibit multidrug resistance and which can be used to screen for compounds of potential therapeutic value can be accomplished using standard recombinant methodology. Thus, Applicants submit that the claims are properly enabled.

Similar considerations apply to the polynucleotides of claims 30-38. Again, the phrase "consisting essentially of" serves to limit the structural variations that are permitted within the scope of claims. Applicants submit that one of skill in the art would clearly be able to make and use any of the individual polynucleotides encompassed.

Claims 27-29 are somewhat different than those discussed above in that they are directed to individual peptides and, in this case, it is expected that the vast majority would *not* retain the functional properties of the full length sequences from which the peptides are derived. In this case, the function that has been asserted for the peptides is in the generation of antibodies that react with the multidrug resistant protein. Since the sequence elements making up the peptides are unique, the antibodies generated by these peptides should be specific. It should also be noted that claims 27-29 use the transitional phrase "consisting of." Thus, no sequence variation at all

is permitted in the individual peptides, *i.e.*, they may vary in length, but they must have a sequence corresponding exactly to a sequence found in one of the recited sequence identification numbers. Applicants submit that it would not require undue experimentation to make any of the individual peptides falling within the scope of the present claims or to use them for the purpose of generating the desired antibodies.

III. Rejection of Claims Based Upon the Written Description Requirement of Patentability

On pages 4-5 of the Office Action, the Examiner rejects claims 5-7 based upon the written description requirement set forth in 35 U.S.C. § 112, first paragraph. The Examiner argues that this requirement necessitates that a patent applicant convey to one of skill in the art possession of the claimed invention at the time of filing. The Examiner states:

> However, the specification does not disclose how the molecules consisting essentially of SEQ ID NO:9-16 are derived, or the isolation of and assaying of molecules. There is no actual reduction to practice, sufficient descriptive information, such as definitive structural features, which are critical to activity, or complete detailed description of the function of claimed invention indicating that the claimed nucleic acids were indeed isolated, produced, and assayed for the uses disclosed. Likewise, the disclosure does not give sufficient descriptive information, such as definitive structural features, location of introns, exons and open reading frames, chromosomal localization, or complete detailed description of the function of claimed genes indicating that the claimed gene was indeed isolated, produced, and assayed for the uses disclosed. Thus, one skilled in the art would not recognize from the disclosure that the applicant was in possession of the invention.

Applicants respectfully traverse this rejection.

35 U.S.C. §112, first paragraph, does require that patent applicants convey that they are in possession of a claimed invention at the time of filing. However, possession must be demonstrated in a conceptual sense; there is no requirement that an applicant have physical possession of every embodiment falling within the scope of a claim. Applicants disagree with the Examiner's statements that structural information is not provided. The sequence identification

numbers set forth each specific amino acid and nucleotide sequence forming the basis of the present claims.

Moreover, the format of the claims provided in the present application corresponds exactly to that set forth in the PTO's written description requirements and which the Patent Office has indicated should be allowable. The PTO claims use the transitional phrase "consisting essentially of," and then recite specific sequence identification numbers. In the present case, the distinguishing characteristics of the claimed polynucleotides are their sequences and the particular functions attributed to the sequences, *i.e.*, the ability to confer multidrug resistance on cells (claims 18-26 and 30-38) and the ability to produce peptides which can be used to generate antibodies that react with a multidrug resistant protein (claims 27-29).

Conclusion

In light of the amendments and discussion above, Applicants submit that all of the Examiner's rejections have been overcome. It is therefore respectfully requested that these rejections be withdrawn and that the claims presently pending in the application be allowed.

If, in the opinion of the Examiner, a phone call may help to expedite the prosecution of this application, the Examiner is invited to call Applicants' undersigned attorney at (202) 419-7013.

Respectfully submitted,

FITCH, EVEN, TABIN & FLANNERY

By Michael A. Sanzo

Michael A. Sanzo
Reg. No. 36,912
Attorney for Applicants

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1801 K Street, N.W.,
Suite 401L
Washington, DC 20006-1201